

$$y = -2 \sin 3 \left(x - \frac{2\pi}{9} \right)$$

1. $A = 2$

$$Pd = \frac{2\pi}{b} = \left[\frac{2\pi}{3} \right]$$

$$PS = \frac{2\pi}{9}$$

$$D = \left[\frac{2\pi}{9}, \frac{8\pi}{9} \right]$$

$$3 \left(x - \frac{2\pi}{9} \right) = 0 \quad 3 \left(x - \frac{2\pi}{9} \right) = 2\pi$$

$$x - \frac{2\pi}{9} = 0 \quad x - \frac{2\pi}{9} = \frac{2\pi}{3}$$

$$x = \frac{2\pi}{9} \quad x = \frac{8\pi}{9}$$

$$R = [-2, 2]$$

2. $A = 3$

$$Pd = \frac{2\pi}{b} = \left[\frac{2\pi}{5} \right]$$

$$PS = -\pi/20$$

$$D = \left[-\pi/20, 7\pi/20 \right]$$

$$5 \left(x + \frac{\pi}{20} \right) = 0 \quad 5 \left(x + \frac{\pi}{20} \right) = 2\pi$$

$$x + \frac{\pi}{20} = 0 \quad x + \frac{\pi}{20} = \frac{2\pi}{5}$$

$$x = -\frac{\pi}{20} \quad x = \frac{7\pi}{20}$$

$$R = [-3, 3]$$

3. $A = 3$

$$Pd = 120^\circ$$

$$PS = NA$$

$$D = [0^\circ, 120^\circ]$$

$$R = [-2, 4]$$

4. $y = a \cos b(\theta - c) + d$

$$y = 3 \cos 3(\theta) + 1$$

$$y = -3 \cos 3(\theta - 60^\circ) + 1$$

$$y = 3 \cos 3(\theta - 120^\circ) + 1$$

$$y = -3 \sin 3(\theta - 30^\circ) + 1$$

$$y = 3 \sin 3(\theta - 90^\circ) + 1$$

$$b = \frac{360}{Pd} = \frac{360}{120} = 3$$

5. $y = a \sin b(x-c) + d$

$y = -11 \sin \frac{3}{2}(x) + 6$

$y = 11 \sin \frac{3}{2}(x - \frac{2\pi}{3}) + 6$

$y = -11 \sin \frac{3}{2}(x - \frac{4\pi}{3}) + 6$

$y = -11 \cos \frac{3}{2}(x - \frac{\pi}{3}) + 6$

$y = 11 \cos \frac{3}{2}(x - \pi) + 6$

$y = -11 \cos \frac{3}{2}(x - \frac{5\pi}{3}) + 6$

$b = \frac{2\pi}{Pd} = \frac{2\pi}{4\pi/3} = \frac{2\pi \cdot 3}{4\pi}$

$b = \frac{3}{2}$

6. $y = a \cos b(\theta - c) + d$

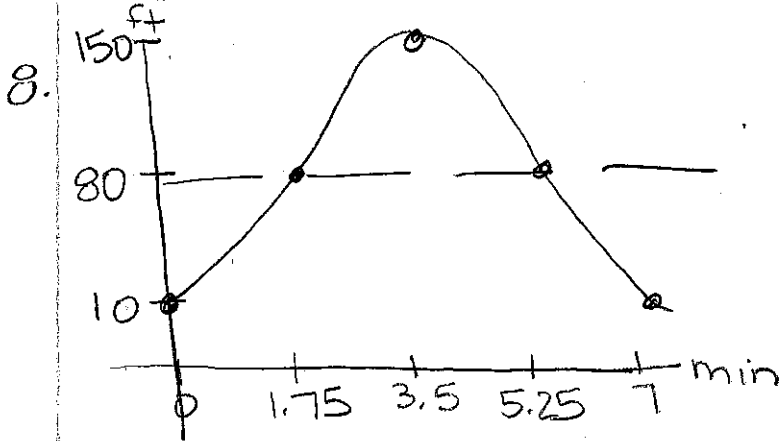
$y = -3 \cos 4(\theta - 60^\circ)$

$b = \frac{360}{Pd} = \frac{360}{90} = 4$

7. $y = a \sin b(\theta - c) + d$

$y = \frac{1}{3} \sin 6(\theta + 30^\circ) - 2$

$b = \frac{360}{Pd} = \frac{360}{60} = 6$



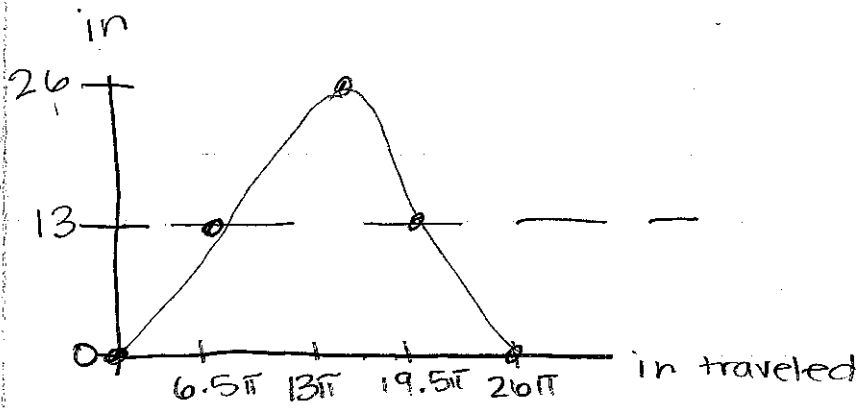
$b = \frac{2\pi}{Pd} = \frac{2\pi}{7}$

$y = -70 \cos \frac{2\pi}{7}x + 80$

b.) 95.6 ft

c.) .9 min

10.
(oops!)
↓
see #9 below



$$C = \pi d$$

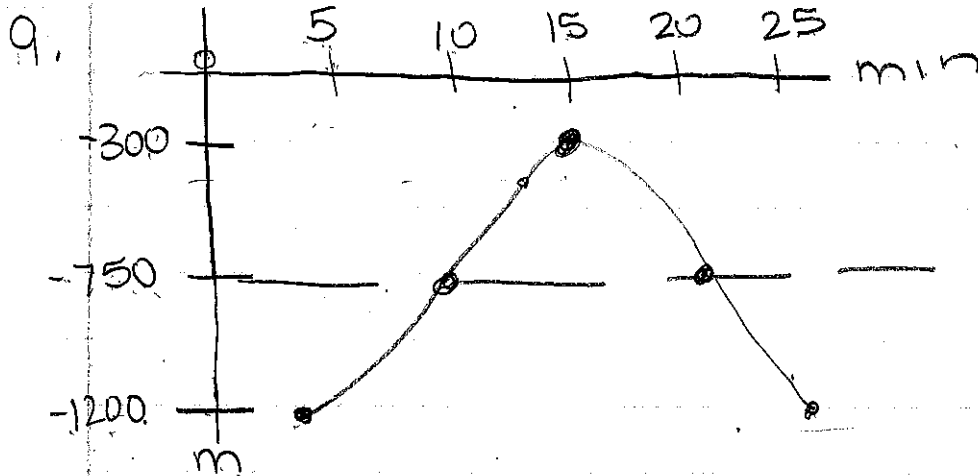
$$C = 26\pi = \text{Period}$$

$$b = \frac{2\pi}{Pd} = \frac{2\pi}{26\pi} = \frac{1}{13}$$

$$y = -13 \cos \frac{1}{13} x + 13$$

b.) 6.8 in

c.) 17.4 in \rightarrow 64.3 in



$$\frac{20}{1} = \frac{2\pi}{b}$$

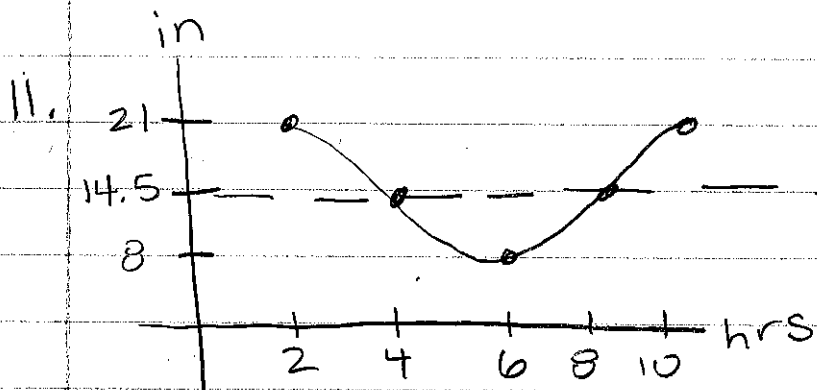
$$\frac{20b}{20} = \frac{2\pi}{20}$$

$$b = \frac{\pi}{10}$$

$$y = -450 \cos \frac{\pi}{10} (x-5) - 750$$

b.) -750 m; No (because you'll be below -400m)

c.) 12.8 min \rightarrow 17.2 min



$$b = \frac{2\pi}{P} = \frac{2\pi}{8} = \frac{\pi}{4}$$

$$y = 6.5 \cos \frac{\pi}{4}(t-2) + 14.5$$

b.) 8.2 in

c.) 3.3 hrs.